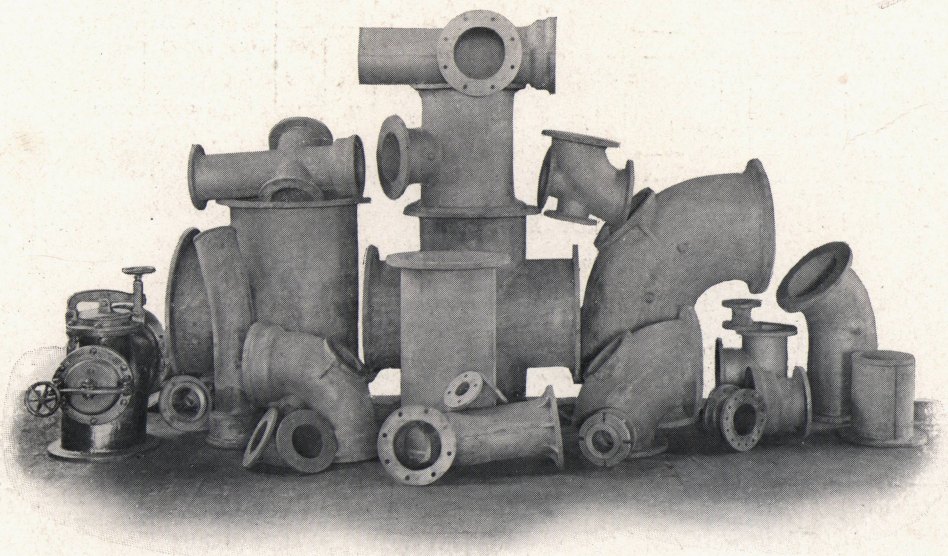
THE WESTERN GAS CONSTRUCTION CO.

GAS ENGINEERS AND BUILDERS

SAN FRANCISCO FORT WAYNE, IND. NEW YORK

Bulletin No. 221.

PIPE FITTINGS AND SPECIALS.



Our Pipe Fittings and Specials were, in connection with the

WESTERN GAS VALVES,

AWARDED A

GRAND PRIZE

AT THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO., 1904.

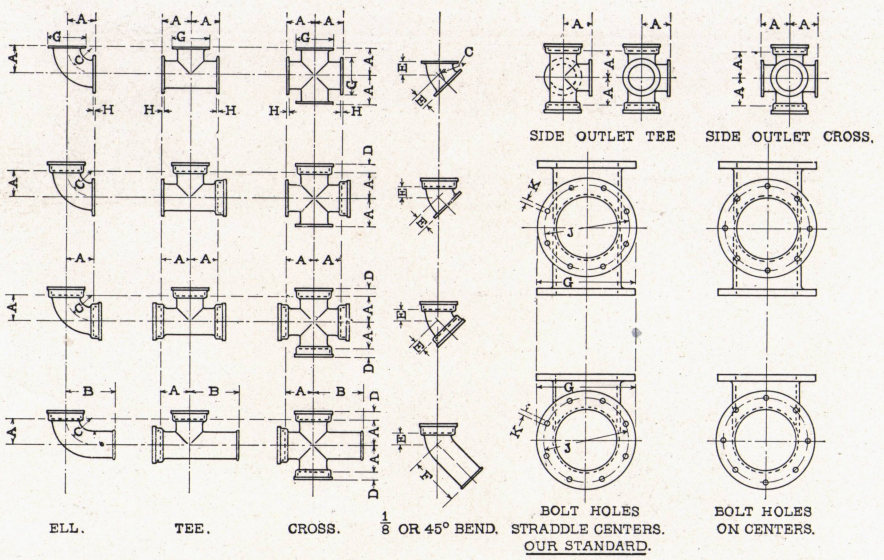


Table of Dimensions of Pipe Connections.

SIZES IN INCHES.	3	4	6	8	10	12	14	16	20	24	30	36	42
A	5	6	6¾	8¾	10¾	12¾	14¾	16¾	20¾	22	25	28	30
B	18	18	18	24	24	24	24	30	30	30	36	42	48
C	3	4	6	8	10	12	14	16	20	20	22⅞	26	30
D	4	4	4	4	4	4	4	4	4½	4¾	4¾	5	5
E	2½	2½	3¼	4	4⅞	5¾	6½	7⅞	9	10¼	11½	13	16
F	16¼	15¾	14½	19½	18¼	17	16	20¾	18½	18½	26½	29	36
G—Flang diam.	7⅝	9	11	13	16	18	20	22½	27	31	37½	43½	50
H— " thick	½	⅝	⅝	¾	¾	⅞	⅞	⅞	1⅛	1⅛	1¼	1¼	1¼
J—Bolt Circle	5⅝	7⅛	9⅛	11⅞	13¾	15¾	17¾	20	14½	28½	35	41	47
K—Size of holes	⅝	¾	¾	¾	¾	¾	¾	¾	⅞	⅞	1	1	1
No. of holes	4	4	4	8	8	8	8	12	16	16	20	24	28

All dimensions in inches and to the finished sizes. All flanges faced and holes drilled.

Any special drilling furnished to templet.

HUB, FLANGE OR SPIGOT. Openings do not have to be made as shown,, which is done for convenience in illustrating. Any opening can be made with outlet as required by the circumstances.

CORRECTION

BULLETIN No. 221; PAGE 2.

Dimension "J" for 20" specials should be 22 ½ instead of 20".

Dimension "K" for 16" specials should be ⅞" instead of ¾".

PIPE SPECIALS.

Western Gas pipe specials are especially designed for use in and about gas works, for connecting various apparatus and also for street main fitting, and are made of tough grey iron, well suited for the purpose. They are made with the three customary styles of joint ends, namely hub, spigot and flange and are made with any combination of these three ends as required.

The regular standard fittings consist of pipe, plugs, caps, quarter bends or elbows, eighth bends commonly called 45° fittings, special bends of angle made to suit requirements, tees, Y's, breeches, crosses, reducers, sleeves, split sleeves, split tees, elbows or bends with side outlet, tees with side outlet, crosses with side outlet, bushings, drips, off-sets, shell nozzles, etc

Fittings with two or more openings are called *regular* when the openings are all for the same size pipe. When openings are for different sizes of pipes, fittings are called *irregular*. All fittings with more than two openings are measured from the intersection of their center lines to a point where they meet the adjoining pipe, namely the face of flange, end of spigot or inside bottom of hub.

We give in the accompanying table the standard lengths for each size of pipe from intersection of center lines to ends. Fittings of these dimensions are called *standard*, and other fittings with different dimensions are called *special*.

The standard length for branches of an *irregular* pipe special is the length of branch, given in the table, for the largest opening of the particular pipe special. For instance the standard length for a branch is 20¾ inches whether it be an 8, 10, 12 inch, etc., branch of a tee whose main run is 20 inches. If this standard dimension of each size is not used, the fitting is then of special dimension. In designating the styles and dimensions of a fitting the ends of the main run are designated as the first and second dimensions and then the side branches in the same manner. For instance a tee may be made by putting an 8 inch side branch on a 10 inch body with hub and spigot on the 10 inch part and flange on the 8 inch branch. If all of standard length same would be designated as follows: "Tee 10x10x8 inches hub spigot flange. The style of ends being designated in the same order as the size, and if the fitting be of special dimensions, it might be designated as 18 x 42 x 16, inches meaning that the hub end of the 10 inch part would be 18 inches long from intersection of center lines and spigot ends would be 42 inches long from the same point and the 8 inch branch would be 16 inches from the face of flange to the intersection of center lines. To indicate this style of tee by sketch, spigot ends are represented by the plain end of a straight line; flanged ends are represented by crossing the end of a straight line by a line representing the

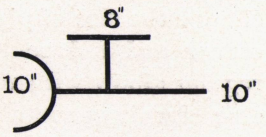


Fig 3.

flange, and a hub is represented by crossing the end of a straight line by a curved line representing the hub and the figures of dimension showing pipe sizes should be placed at the ends as shown in Fig. 3 and Fig. 4 showing a similiar tee, but with hub instead of flange for the 8 inch branch. Fig. 5 illustrates the style of sketch used to represent respectively an eighth bend a quarter bend, a tee, a cross, a reducer, a sleeve, a split sleeve, a plug, and a cap

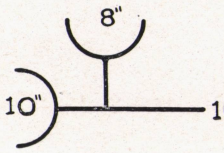


Fig. 4.

A double spigot eighth bend is shown in Fig. 6.

Fig. 5.

Our flanges are made in accordance with American Gas Light Association Standard unless otherwise ordered. For connecting new fittings to old ones which are not American Gas Light Association standard, the diameter of flanges used, the size and number of bolts and bolt circle should be given in order that flanges may be made to fit, also noting whether bolt holes are evenly spaced and whether they straddle or are on center lines. By center line is meant a line drawn across the face of a flange through the center in the same plane as the axial line of the side branch if there be any. In the case of side branch tees and crosses the center line will be in the plane of the axis of one branch and at right angles to that of the other from which it follows that the center lines, on opposite flanges must be parallel and opposite, for if they are not, a twist in the pipe will be the result.

Irregular fittings of any style may be made as our patterns are made of such design as to be practically interchangable so that joint ends of fittings may be made of any size and of any style joint required, although it is advisable to use regular and standard fittings wherever it can conveniently be done, as by so doing much time may be saved in making up connections as such standards are usually carried in stock. In the case of bends it is seldom advisable to change the size of pipe between the two ends, but if it is desired to turn a corner and reduce the size of pipe at the same time, it is preferable to use a regular elbow with reducer on end. Flanges may be made special as to diameter, for instance a 10 inch pipe end may be provided with a flange suitable for connecting to the flange of a 16 inch pipe. In ordering fittings always observe the foregoing rules as to indicating with sketch the style and dimensions, although sketch is not always necessary in the case of common fittings, but in the case of small fittings particularly if they be of unusual design, sketch should be given showing style and dimension. In the case of reducers, pipe diameter at each end must be given as well as stating the style of each end.

All Western Gas fittings are made with heavy hubs, finished flanges and beaded spigots. The thickness of metal in fittings is the same as in standard gas pipe with corresponding diameters, except that in the case of large

fittings with small branches, the thickness of metal in the small branches is not reduced to be quite as thin as pipe of the same size.

In purchasing fittings, the most satisfactory way is not to buy them by the pound, but to specify clearly the kind of fittings required, giving dimensions, etc., and have the maker submit his price, being careful to ask bids only from reliable makers who will stand back of their goods.

We make all styles of fittings from 3 inches to 48 inches inclusive. In addition to the list of shapes herein specified we also make tapped flanges for connecting threaded pipe to standard flanged fittings, also tapped hubs for connecting threaded pipe to spigot pipe.

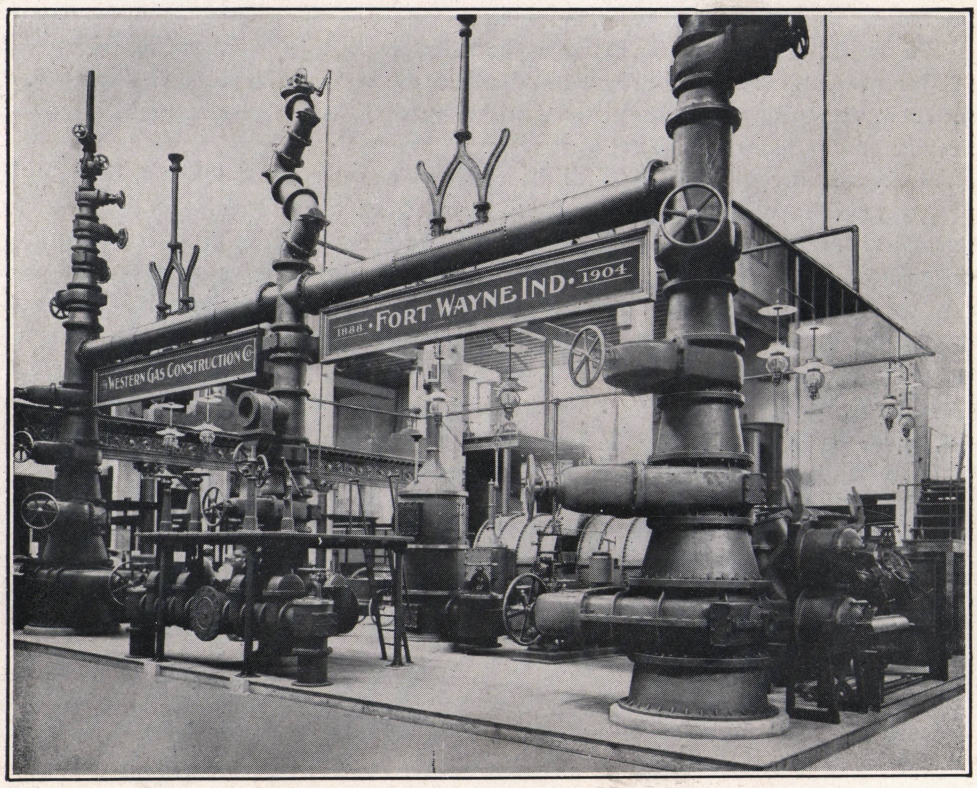
In the accompanying table all dimensions are given in inches and finished sizes and unless otherwise ordered, all flanges are faced and holes drilled. In the case of bends where it is desirable to have access to the pipe for cleaning purposes it is preferable to use elbows with cleaning holes rather than tees or crosses, as with a large cleaning hole of our design provided with self-sealing coverings it is easier to clean a pipe through the hole in an elbow than through a cross or tee and easier flow of the gas is provided. In the event of future changes such elbows are rarely if ever discarded being generally reused in other parts of new construction. Elbows and other fittings that are required may be provided with shoes for standing on a pier or other support, such elbows or tees being called shoe ells or shoe tees. Offsets are sometimes used, but it is generally advisable to use two bends instead, as if displaced by change of construction the offset is seldom available in any other position.

Fig. 6

The Western Gas Construction Co.

WE BUILD GAS PLANTS COMPLETE

INCLUDING ALL CONNECTIONS.



FRONT OF OUR LOUISIANA PURCHASE EXHIBIT.

Fittings and Specials of Every Kind

FOR GAS WORKS.

THE WESTERN GAS CONSTRUCTION COMPANY,

FORT WAYNE, INDIANA.